

(No Model.)

7 Sheets—Sheet 1.

A. J. MOXHAM.

SWITCH PIECE AND METHOD OF MAKING IT.

No. 500,930.

Patented July 4, 1893.

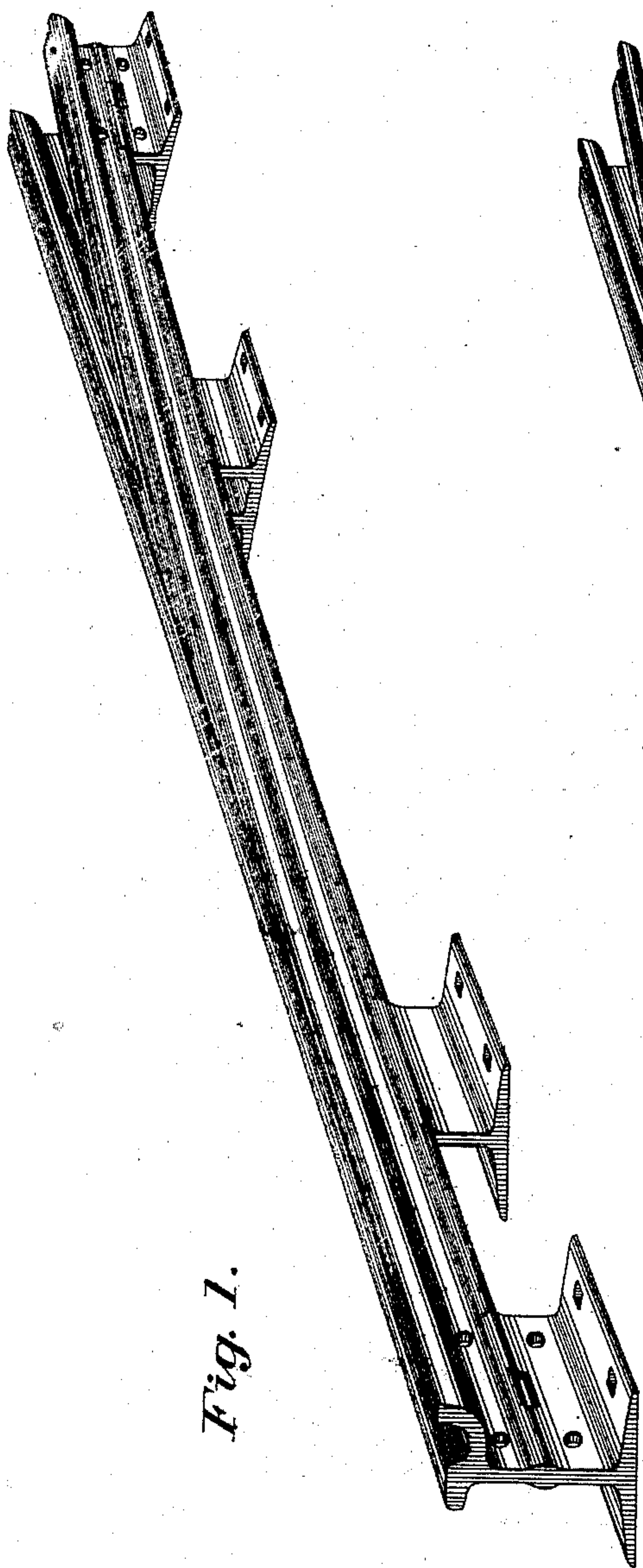


Fig. 1.

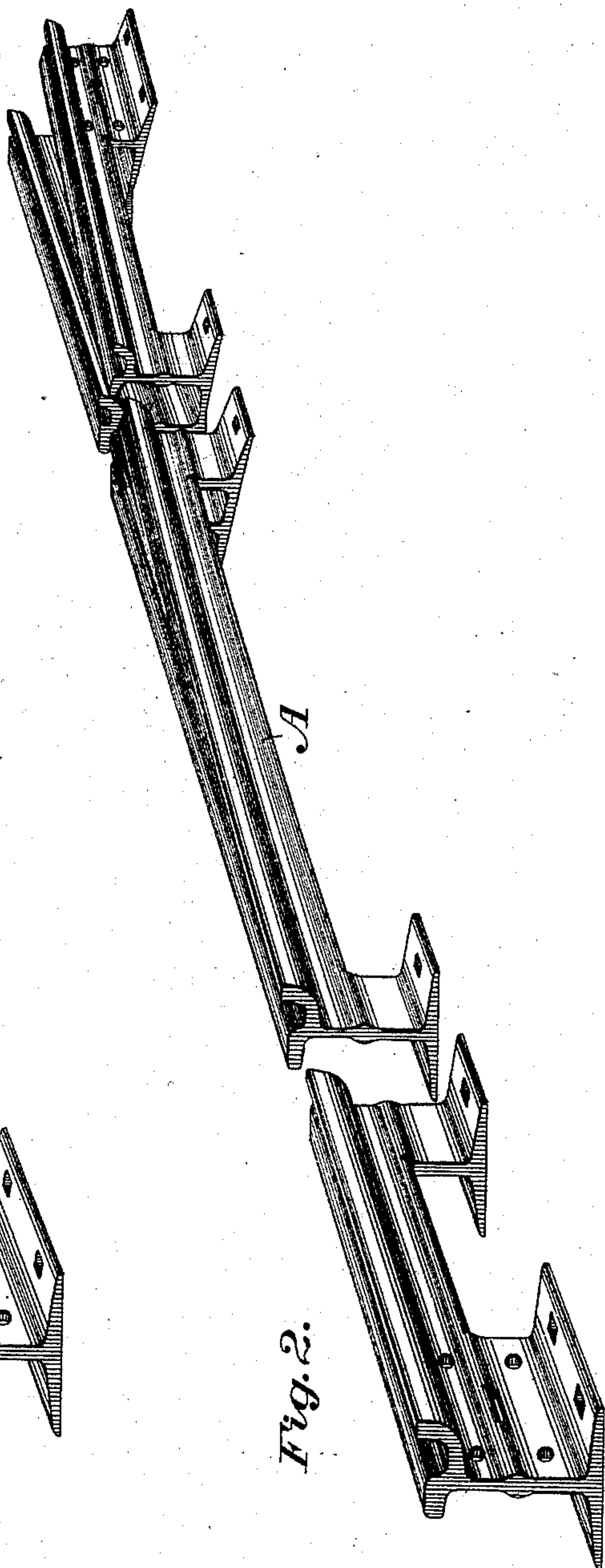


Fig. 2.

WITNESSES:

Francis P. Reilly,
W. F. Brückel,

INVENTOR

A. J. Moxham
BY R. M. Doornicks

ATTORNEY.

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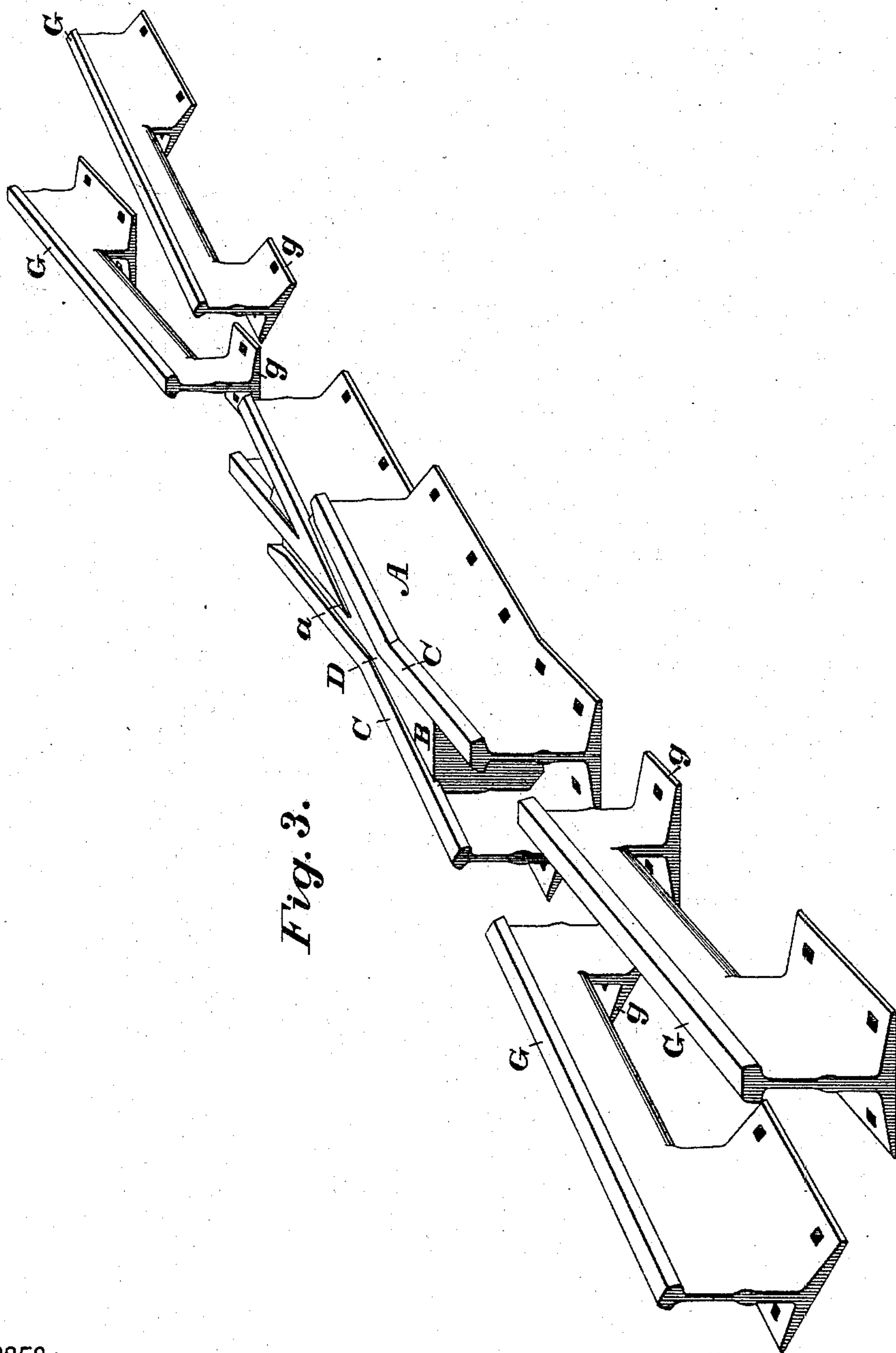


Fig. 3.

WITNESSES :

Francis P. Riley.
W. F. Brückel,

INVENTOR

BY *R. M. Toorhees*

ATTORNEY.

(No Model.)

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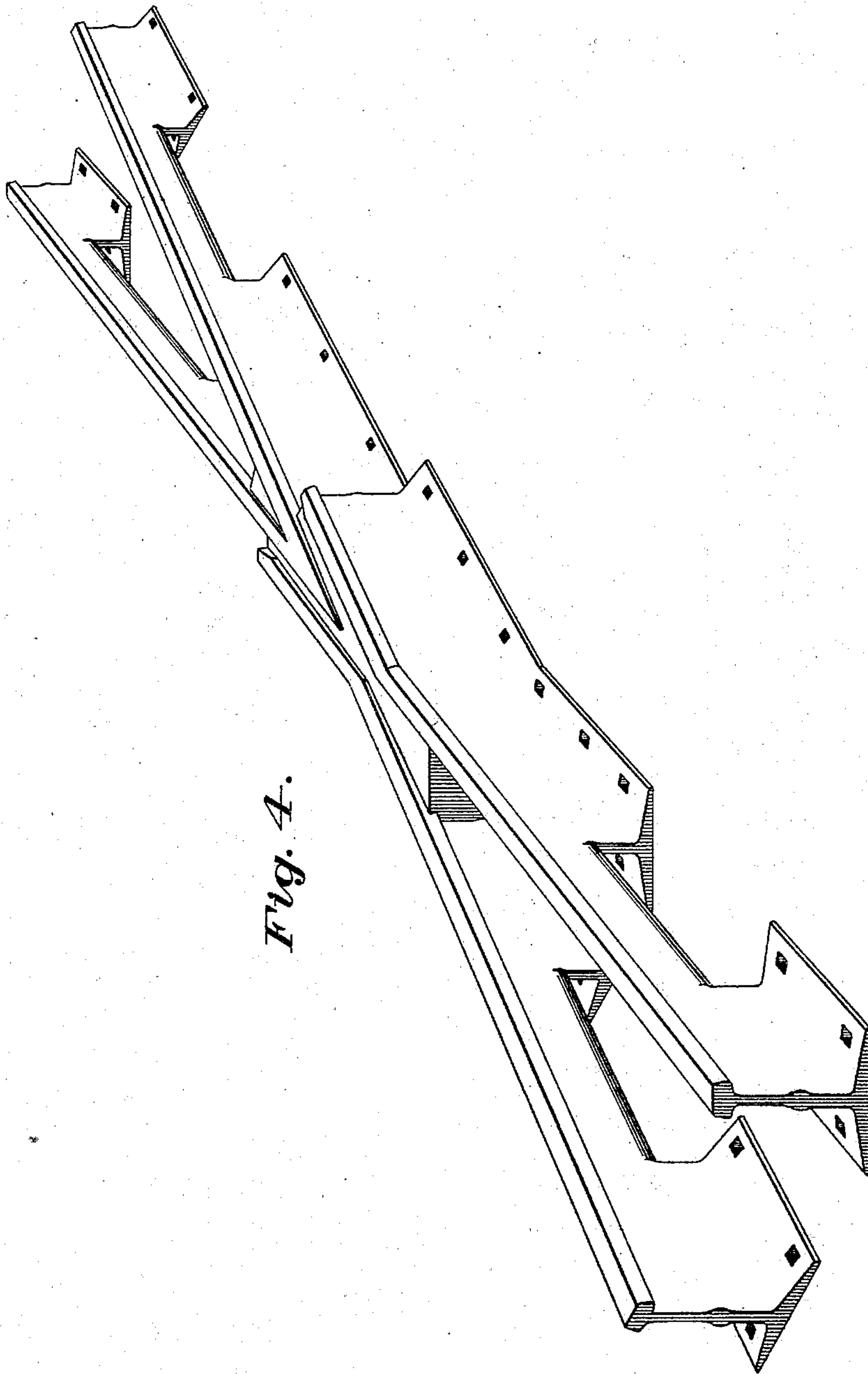


Fig. 4.

WITNESSES:

Francis P. Riley,
W. F. Brückel,

INVENTOR

A. J. Moxham
BY P. M. Torrey
ATTORNEY.

(No Model.)

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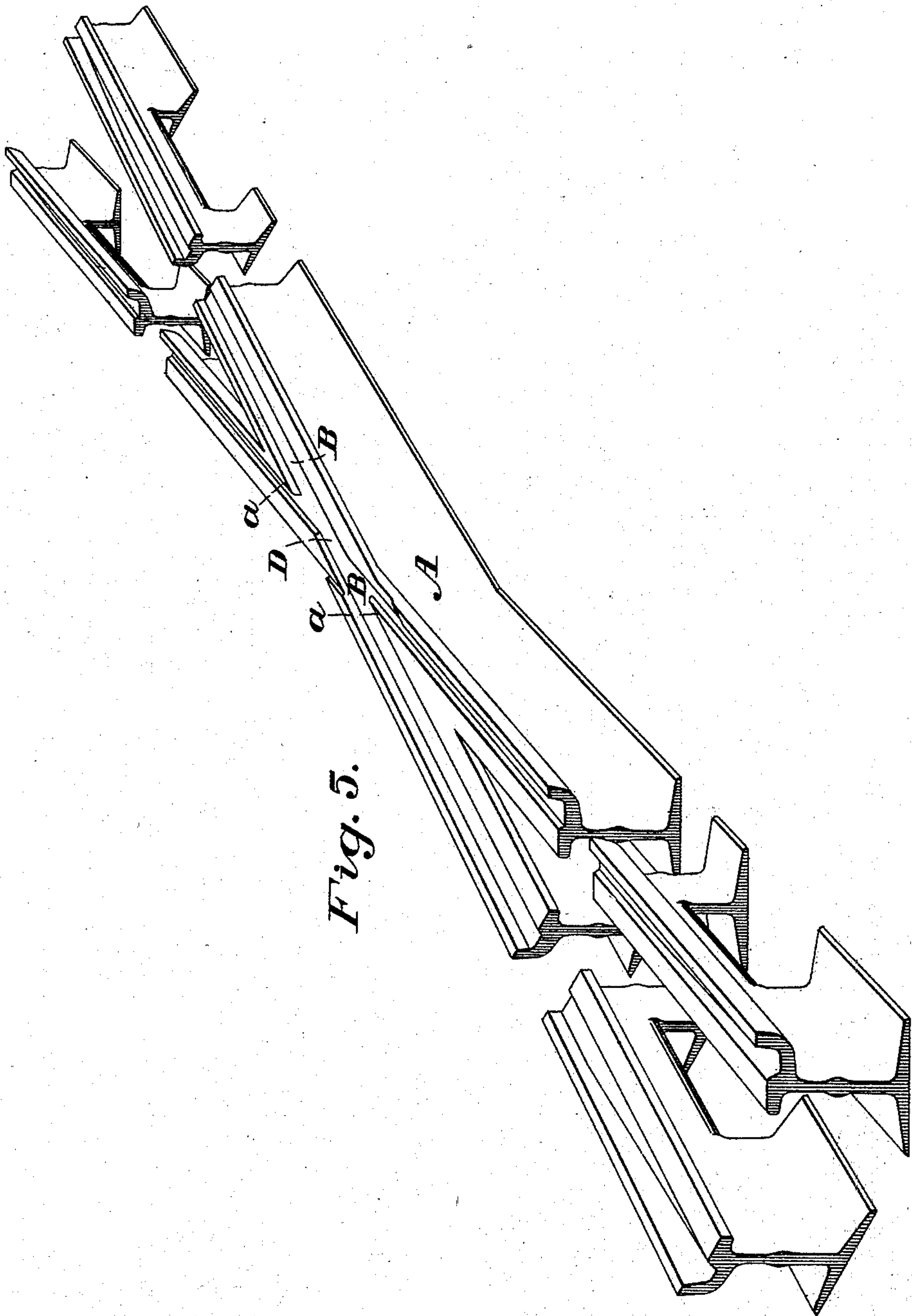


Fig. 5.

WITNESSES:

Francis P. Reilly,
W. F. Brückel,

INVENTOR

A. J. Moxham

BY

R. M. Doohess

ATTORNEY.

(No Model.)

7 Sheets—Sheet 5.

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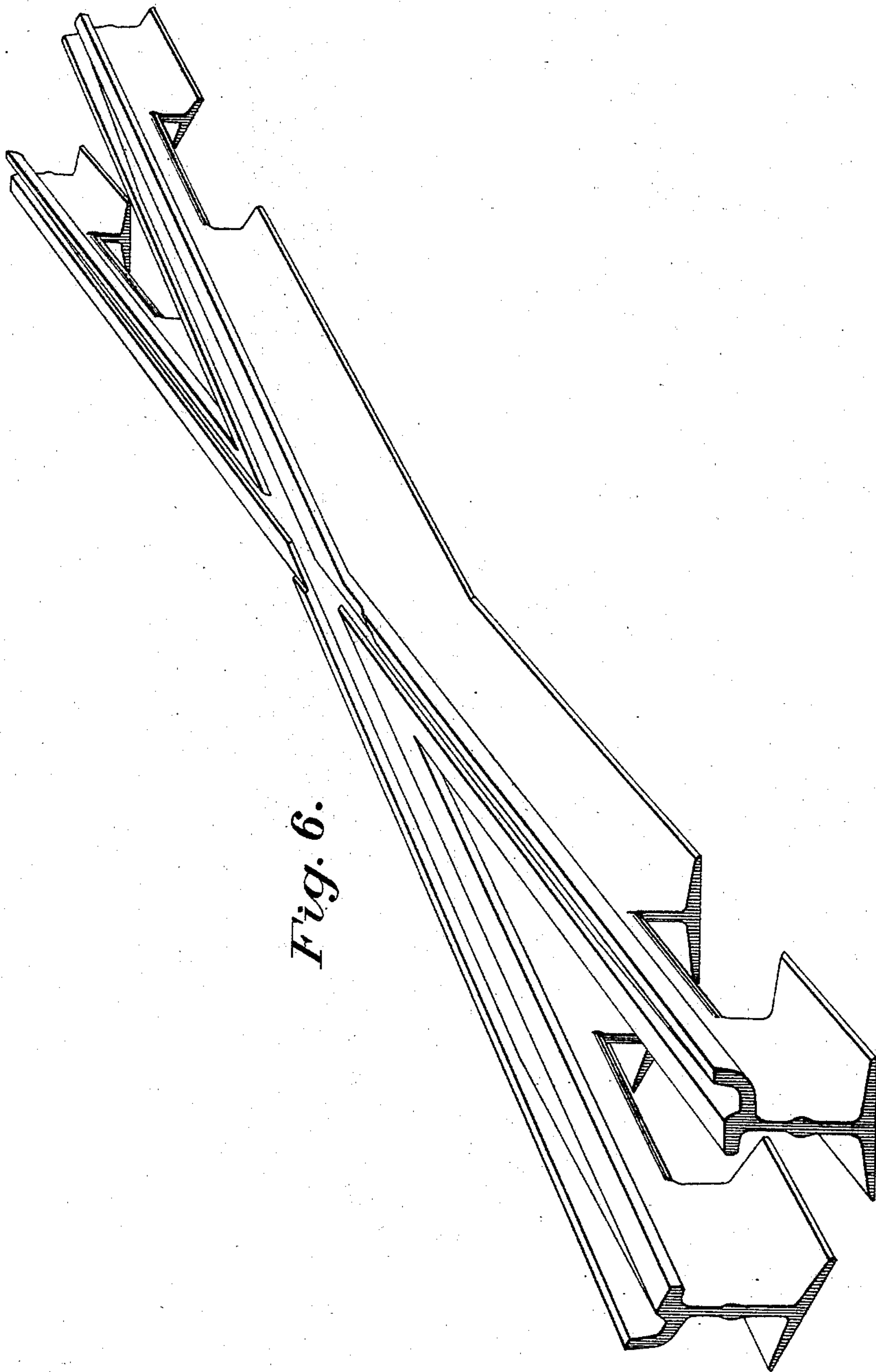


Fig. 6.

WITNESSES:

Francis P. Riley,
W. H. Brückel,

INVENTOR

A. J. Moxham
BY E. M. Doonick

ATTORNEY.

(No Model.)

7 Sheets—Sheet 6.

A. J. MOXHAM.

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Patented July 4, 1893.

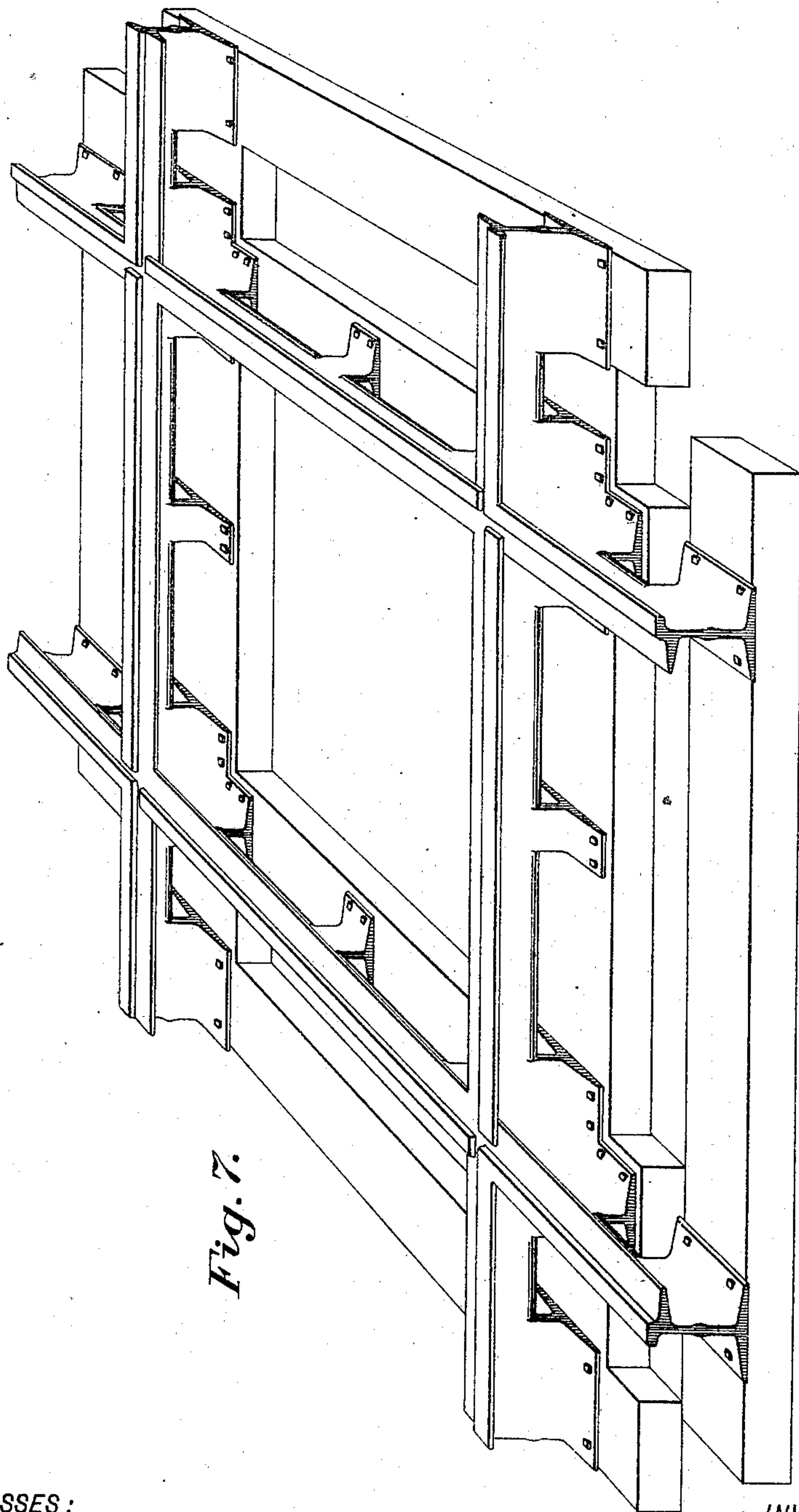


Fig. 7.

WITNESSES:

Francis P. Reilly,

W. F. Brückel,

INVENTOR

A. J. Moxham

BY

P. M. Donohue

ATTORNEY.

(No Model.)

7 Sheets—Sheet 7.

A. J. MOXHAM.

SWITCH PIECE AND METHOD OF MAKING IT.

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Patented July 4, 1893.

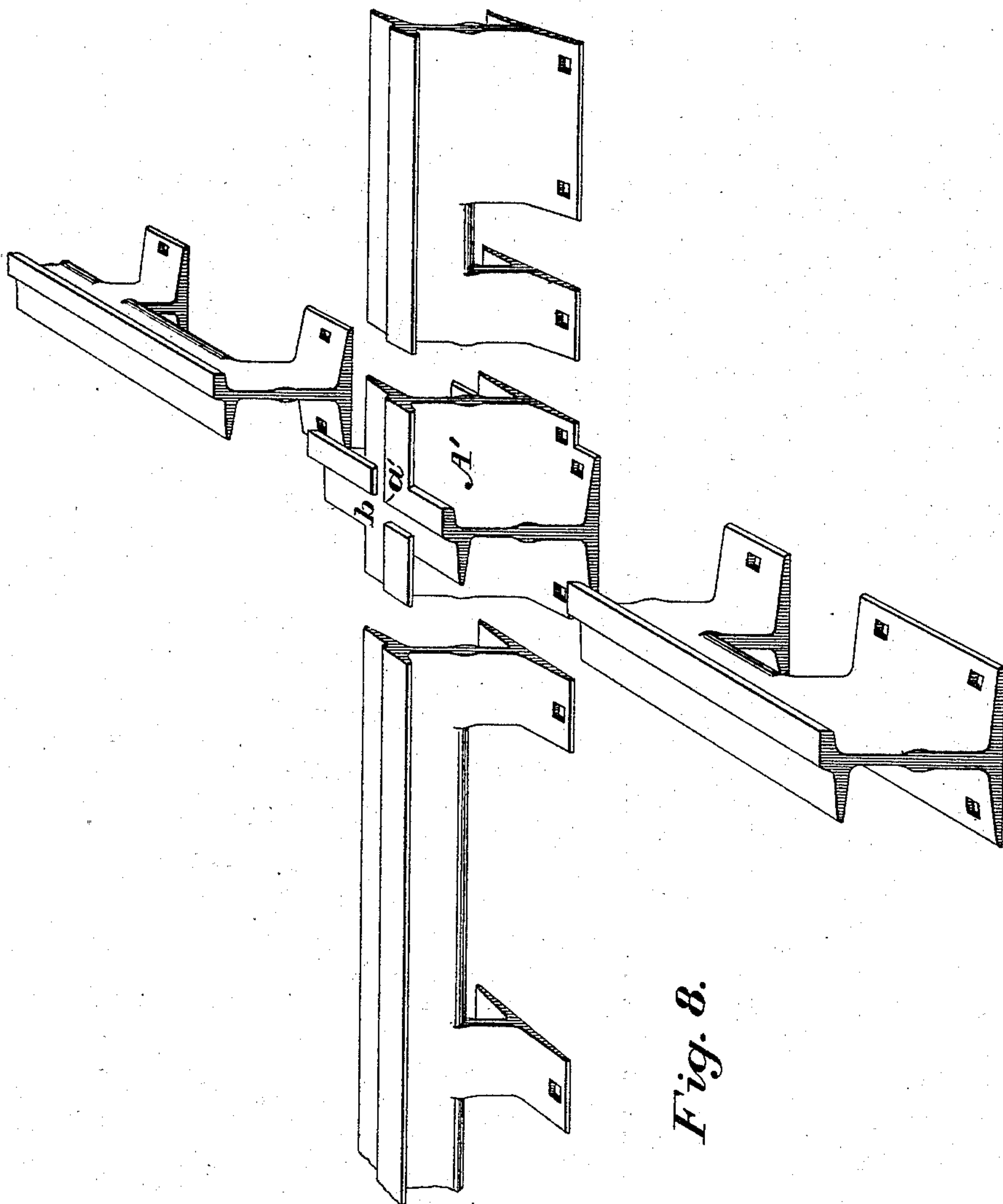


Fig. 8.

WITNESSES:

Francis P. Reilly,
W. F. Brückel,

INVENTOR

A. J. Moxham

BY

R. M. Voorhees

ATTORNEY.

UNITED STATES PATENT OFFICE.

ARTHUR J. MOXHAM, OF JOHNSTOWN, PENNSYLVANIA.

SWITCH-PIECE AND METHOD OF MAKING IT.

SPECIFICATION forming part of Letters Patent No. 500,930, dated July 4, 1893.

Application filed January 26, 1892. Serial No. 419,304. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR J. MOXHAM, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented certain
5 new and useful Improvements in Railway Switches, Frogs, Crossings, and Analogous Structures and Methods of Manufacturing the Same, which invention is fully set forth and illustrated in the following specification and
10 accompanying drawings.

The object of this invention is to increase the durability and at the same time to lessen the first cost of making railway switch-pieces, frogs, crossings and analogous structures.
15 Switches, frogs, and crossings are composed essentially of two portions one of which is the switch frog or crossing proper, which consists of the point, the throat, the floor plate and extension rails. The other is composed of
20 the track connecting rails. The first portion of the structure is subjected to great wear, which is a source of much trouble and expense; the wear being incident to the travel of both tracks on this portion, and also it is
25 more or less cut away, while the track connecting rails of the switch, &c., are not subject to the same amount of wear. If the first portion of the structure were made of better and more durable material than could well
30 be afforded for the entire structure, and their wearing surfaces tempered or hardened, it would effect a great improvement. If this be attempted with the ordinary construction of switch, &c., it could be done only with great
35 difficulty, if at all, without warping the structure, if the structure is in an entirety at the time such an attempt is made. It is also necessary that the track connecting rails should be true both in cross section and in elevation,
40 as they should make a close fit with the track rails, and it is therefore desirable they should be made of rolled steel in the ordinary manner. I have discovered that if the following method of construction be carried out, I am
45 enabled to construct switch-pieces, frogs and analogous structures for railway tracks, in which the portions of the structure subject to excessive wear will be in condition to withstand said wear, and at the same time the
50 remainder of the structure can be constructed of the ordinary material and in the ordinary manner. I first separately construct an inte-

gral or homogeneous portion, comprising the point, the throat, the floor plate and the extension rails, by either casting it as a whole or mak- 55
ing it of parts welded together. It is preferably of a good quality of steel in compact form, thus rendering it capable of being tempered or hardened, and suitable to withstand excessive wear. Then the wearing surfaces of such 60
portion are tempered or hardened, which operation, owing to the short and compact proportions of said portion, is easily effected without liability of warping. Lastly, the ends
65 of this portion are welded or brazed to, or otherwise made integral with, the track connecting rails of the structure, so that when completed, the switch, frog, &c., is an integral structure throughout, provided with
70 track connecting rails. At the welding points of the track, connecting rails with the rest of the structure, the heat of the weld is confined to a short zone, so that the hardened
75 surfaces of the remainder of the structure are not injured by said heat, or at most to only so short a distance from the weld as to be of
no practical importance. But if softened, said surfaces can be rehardened, by quick cooling, without danger of the small portion
80 of metal acted on warping the rest of the structure by such cooling.

I will now describe the preferred form of embodiment of my invention.

In the accompanying drawings, Figures 1 and 2 are perspective views of a "mate" or 85
blind switch, both after and before the welding is effected which is performed in carrying out my invention, the forms of rails shown in these figures being those known as girder
90 guard-rail. Figs. 3 and 4, are perspective views of a frog both before and after such welding, the sections of rail shown being of a form known as T-rail. Figs. 5 and 6, are
95 perspective views of a curve-cross both before and after the welding of the parts, the rails shown being of a form known as guard-rails. Figs. 7 and 8, are views in perspective of a
"girder-crossing," Fig. 8 being enlarged and showing one corner of the girder-crossing be-
100 fore the welding.

In said figures the several parts are respectively indicated by reference letters as follows:

The structures shown in Figs. 1, 4, 6, and

8, and respectively known as "mate" or "blind switch," "frog," "curve-cross" and "girder-crossing" have each one portion which may be termed the switch mate, frog, 5 curve and girder crossing proper, which comprises the point, the throat, the floor plate and the extension rails.

The girder-crossing shown in Fig. 7, has four of such portions, one at each corner. 10 This intermediate part, at least in the case of mate, frog and curve-cross, includes the point a , the throat D, the extension rails C C, opposite to the point and throat and the in-closed floor-plate B.

15 In Figs. 3 and 5, the letter A, represents the portion of the structure made separate from the track connecting rails, including the point a , the floor-plate B, and the extension rails C C, opposite to the point a and throat D. The 20 form and size of this portion A, will, of course, vary more or less according to the forms and depths of the rails employed, but it should be as short and compact as possible. If, as shown in the drawings, the rails be mounted on 25 chairs, the structure may be mounted on chairs also; or if, as shown, the depth of the structure should correspond with the combined depth of track-rail and chair, the lower portion of the structure need not be left continuous, but in such case, may be cut away at 30 intervals, leaving intact, portions of metal or feet upon which to be supported. The portion A, of the structure having been constructed, the point a , the floor B and the extension rails C C, exposed to wear, are tem- 35 pered or hardened, after which the track connecting rails (indicated in Fig. 3 by the letter G), necessary to complete the structure and the ends of the part A, are welded together 40 or otherwise joined preferably into integral union. If the rails are mounted on chairs, a chair g , should preferably be located at the end of each rail, somewhat as shown in Fig. 3, so that the weld of the rail and structure (if 45 welded together) would also include the chair. A single cross-tie can then support the structure at or directly under such weld.

Several types of rails are shown in the different figures in connection with the several 50 structures. It is obvious, therefore, that this invention may be used in connection with any form of rail which may be preferred.

In the girder cross the part A', as shown in Fig. 8, is provided for each corner of the structure 55 as shown in Fig. 7, and is made separate

from the track connecting rails, and in such crossing, the points a' , and the floor plate b , are the principal parts to be tempered. If desired, the tempering of the respective points of part A and A' can be avoided by the use 60 of a tough and very hard class of steel, such as the new manganese steel or nickel steel. Such metal can be used within commercial limits owing to the light weight of the mass required as distinct from the rest of the structure. 65

I do not intend to limit myself to the precise construction hereinbefore described, as the same may be varied; the different parts may be united or connected together by means 70 other than hereinbefore described.

Having thus fully described my invention, I claim—

1. A railway-switch, frog, crossing or analogous structure, provided with the part intermediate to the track connecting rails formed 75 separate from the track connecting rails and united into an integral structure therewith.

2. A railway-switch, frog, crossing, or analogous structure, provided with the part intermediate to the track connecting rails formed 80 of material different from the track connecting rails and united into an integral structure therewith.

3. A railway-switch, frog, crossing, or analogous structure, provided with the part intermediate to the track connecting rails formed 85 separate from the track connecting rails and tempered or hardened and united into an integral structure with said track connecting 90 rails.

4. The hereinbefore described method of manufacturing railway-switches, frogs, crossings and analogous structures which consists 95 in first constructing and tempering or hardening the part intermediate to the track connecting rails and then integrally uniting to said part the track connecting rails.

5. The hereinbefore described method of manufacturing railway-switches, frogs, crossings and analogous structures, which consists 100 in first constructing and tempering or hardening the part intermediate to the track connecting rails and then welding thereto the track connecting rails.

ARTHUR J. MOXHAM.

Witnesses:

W. F. BRÜCKEL,
FRANCIS P. REILLY.